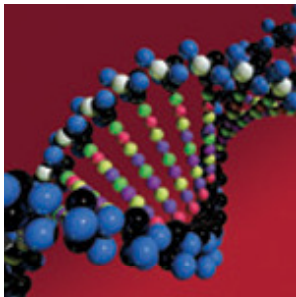


Update on Haynesville Shale Development



NETAC Technical Advisory Committee Meeting

December 5, 2011

Sue Kemball-Cook and Greg Yarwood
ENVIRON

skemballcook@environcorp.com

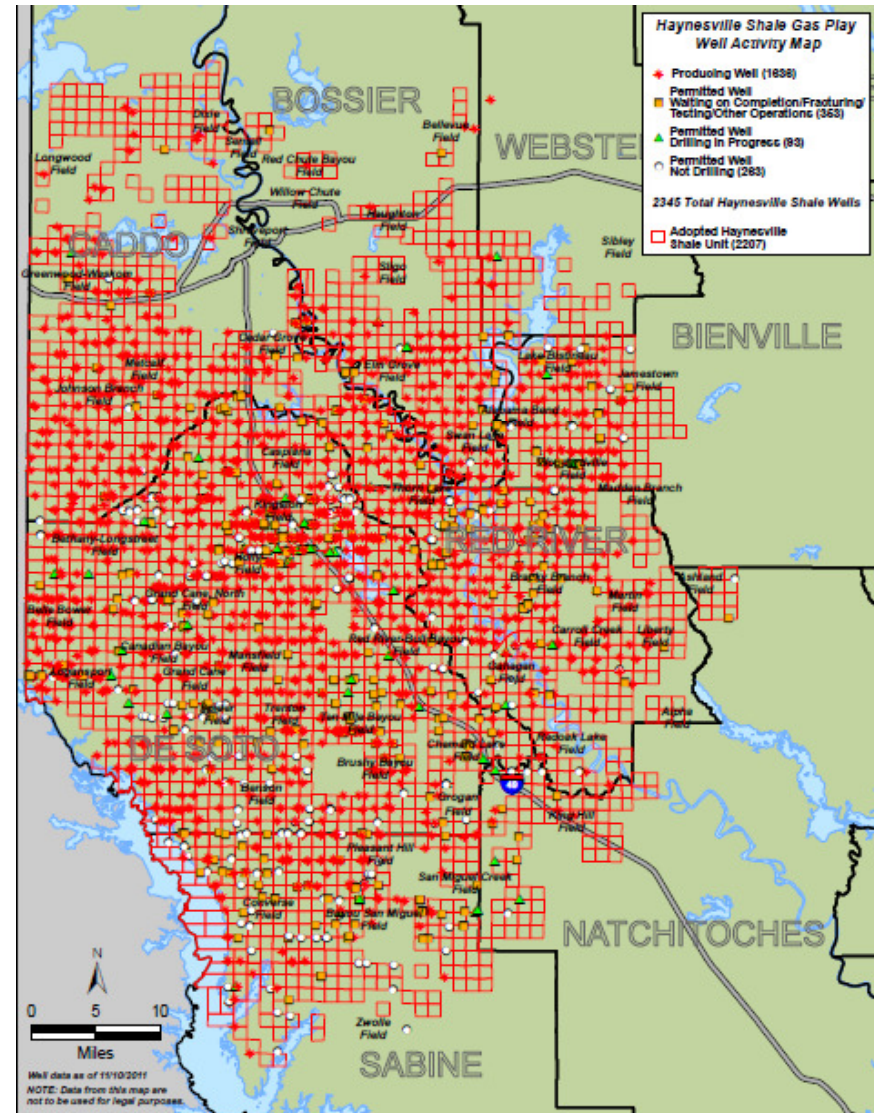
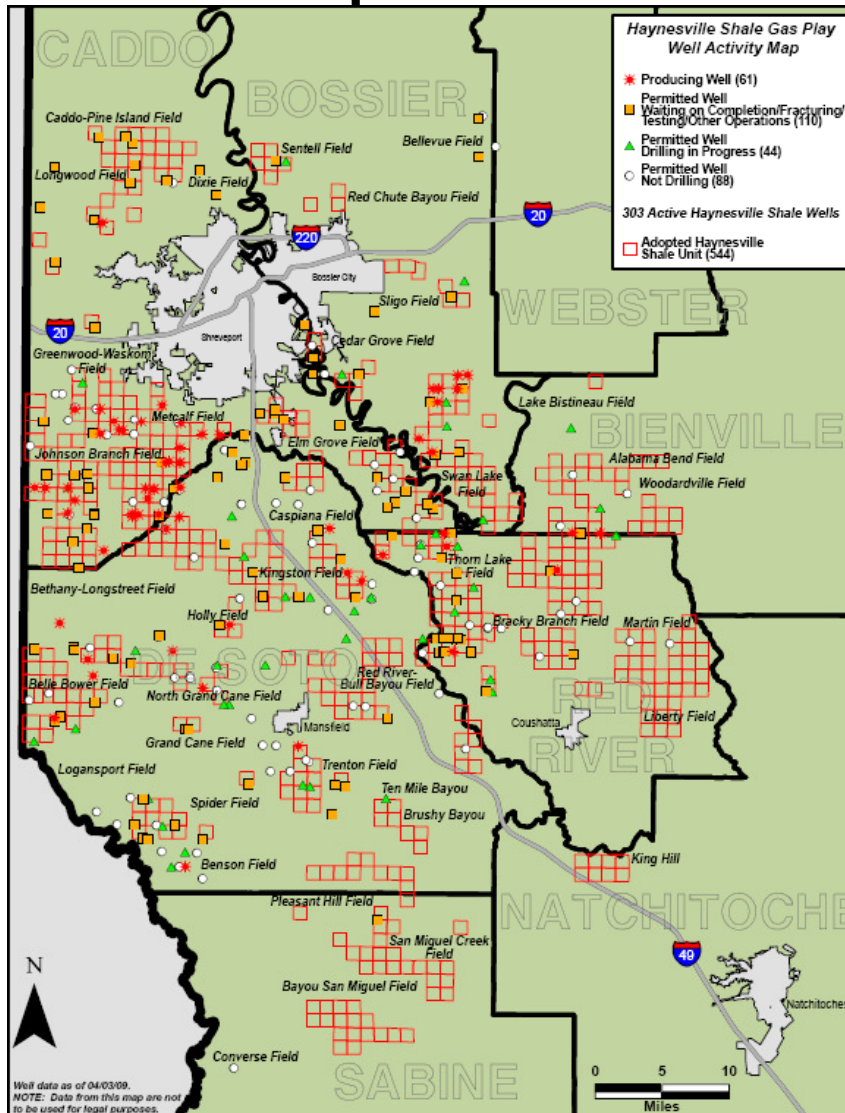
ENVIRON



Louisiana Haynesville Development

April 2009

November 2011

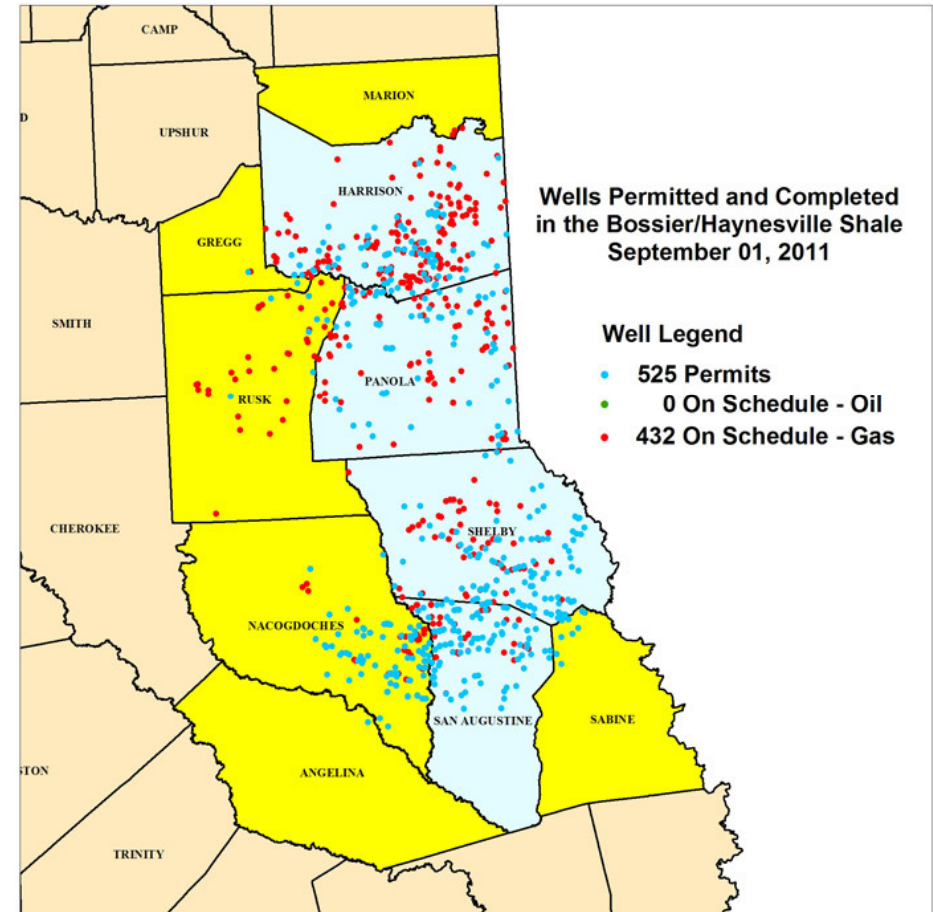
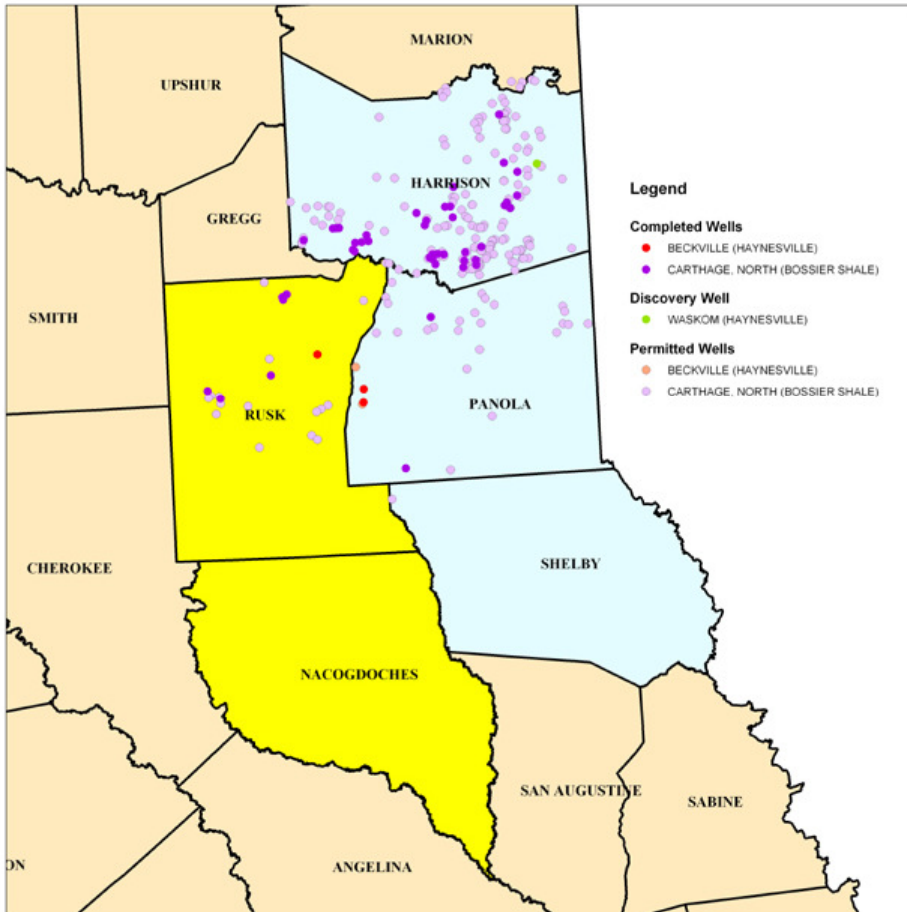




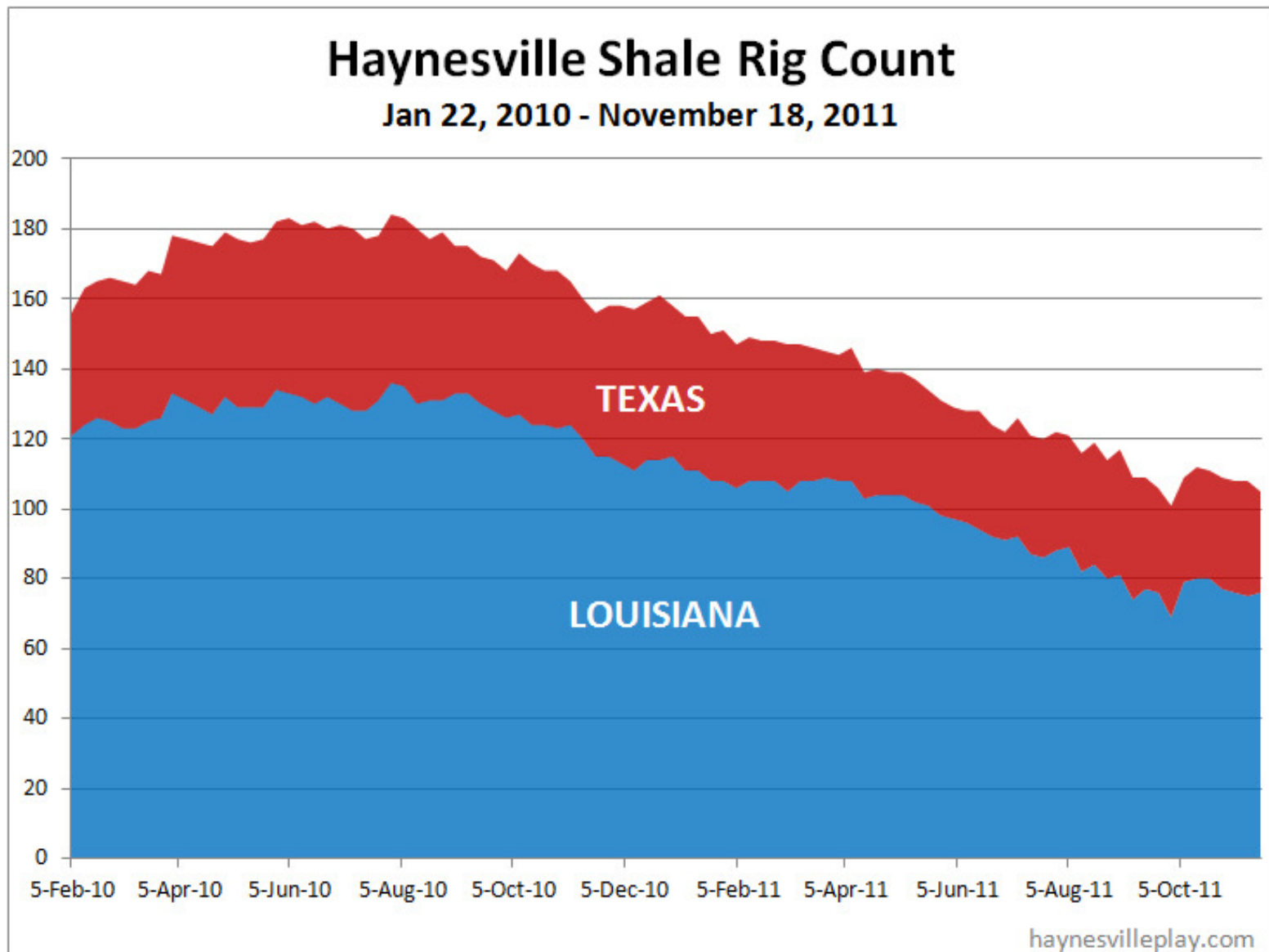
Texas Haynesville Development

April 2009

September 2011



- Haynesville development in 5 additional counties in 2011

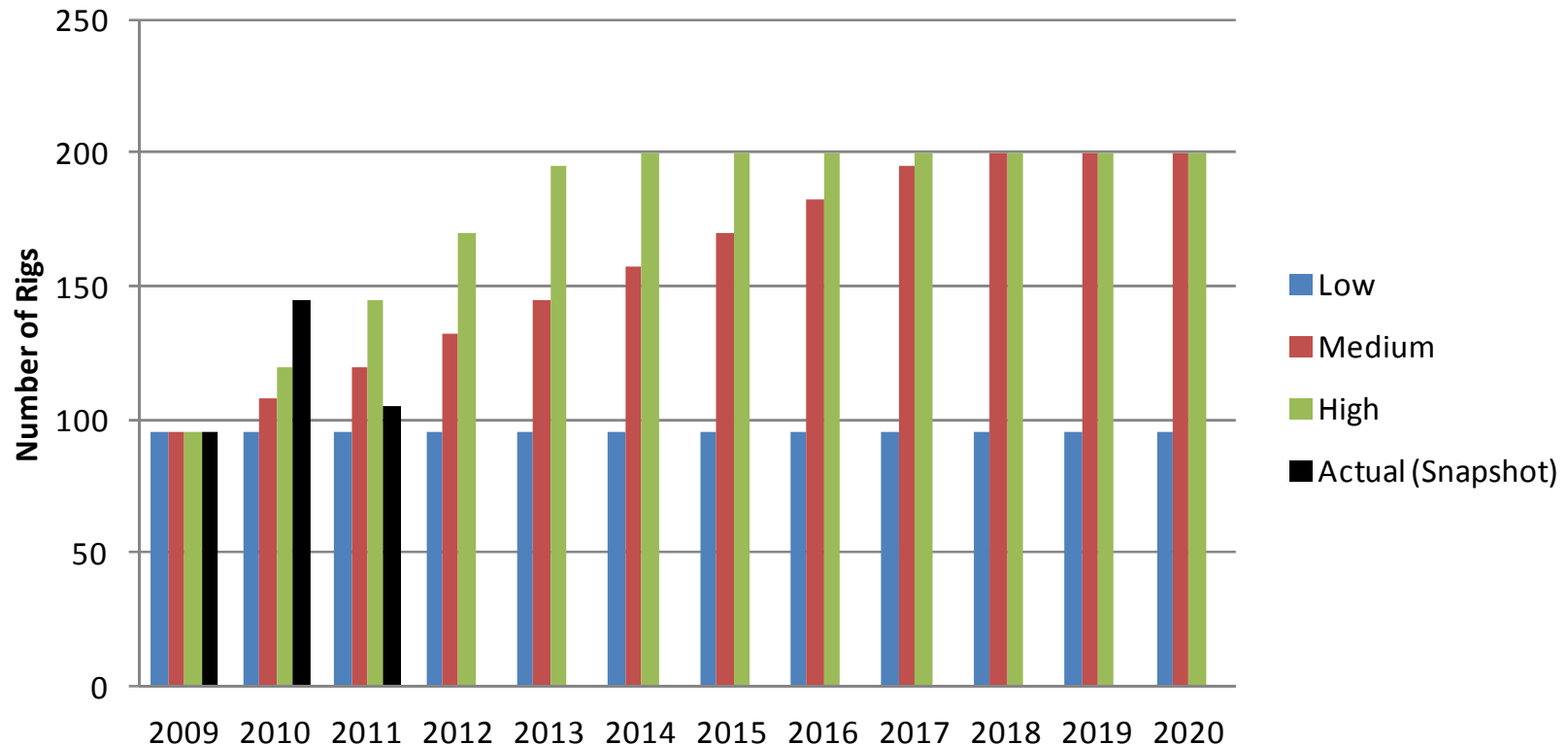


- Low natural gas price relative to oil drives shift to liquids



Drill Rig Projections

Drill Rig Count

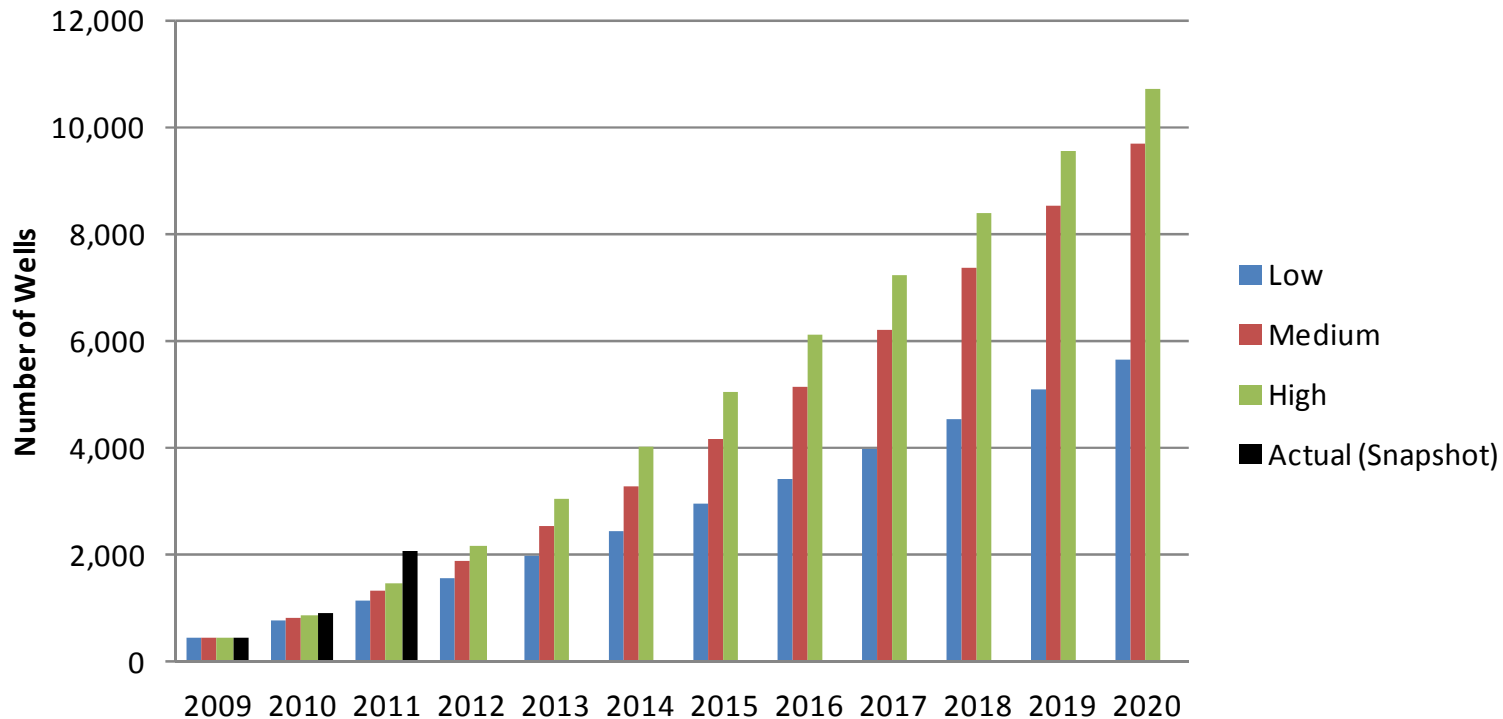


- In 2010, actual drill rig count exceeded projections for high scenario
- In 2011, number of active rigs dropped



Well Number Projections

Active Haynesville Shale Wells



- Currently ahead of all projections, but expect rate of development to slow
- Texas: 432 producing Haynesville wells, 525 permitted (TRRC)
- Louisiana: 1636 producing wells, 2345 total wells (LDNR)



Summary

- Haynesville Shale development has proceeded rapidly; well count exceeds even the high scenario
 - Pace of drilling has slowed, but number of Haynesville wells still growing
 - Continues to be a concern for future regional air quality
- Propose to expand scope of Haynesville emission inventory project
 - Survey of producers
 - Well site visits
 - Incorporate data that has become available since original emission inventory prepared in 2009



End



Projected Haynesville Shale NOx Emissions



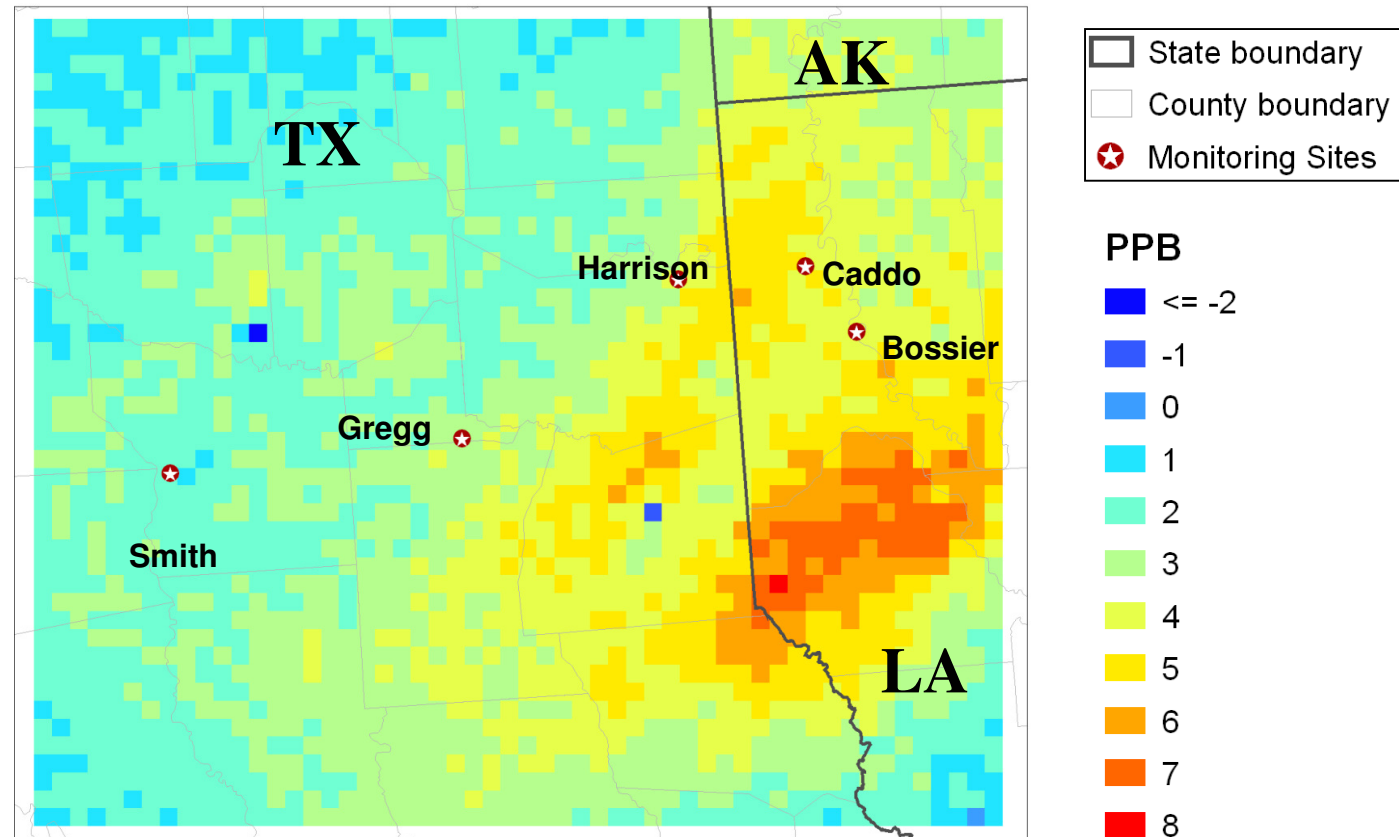
Forecast NOx Emissions (Tons/Day)

Scenario	2012	2020
Low	61	64
Medium	82	127
High	140	267

- Perspective: 50 tons/day roughly equivalent to NOx emissions from a large, coal-fired power plant



Ozone Design Value Impacts in 2012



- Design values increase 4-5 ppb at Louisiana monitors
- 4 ppb increase at Harrison, TX monitor
- Smaller increases (1-2 ppb) at Gregg and Smith monitors in TX